

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
aTC424
13052



**United States
Department of
Agriculture**

Soil
Conservation
Service



Champaign
Illinois

Department of
Transportation
Division of
Water Resources

Illinois



FLOODPLAIN MANAGEMENT RECONNAISSANCE STUDY REPORT

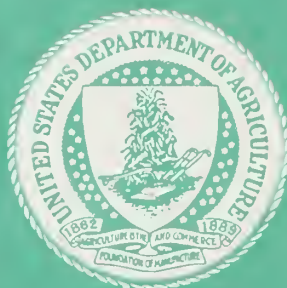
SALEM MARION COUNTY



AD-33 Bookplate
(1-68)

NATIONAL

**A
G
R
I
C
U
L
T
U
R
A
L**



LIBRARY

CITY OF SALEM

MARION COUNTY, ILLINOIS
FLOODPLAIN MANAGEMENT
RECONNAISSANCE STUDY

Prepared by

U.S. Department of Agriculture
Soil Conservation Service
Champaign, Illinois

In cooperation with

STATE OF ILLINOIS
Department of Transportation
Division of Water Resources

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
SEP 18 1985
CATALOGING = PREP.

September 1984

TABLE OF CONTENTS

	<u>Page</u>
	1
INTRODUCTION	1
STUDY AREA DESCRIPTION	3
NATURAL VALUES	5
FLOOD PROBLEMS	6
PROBLEM SUMMARY	9
EXISTING FLOODPLAIN MANAGEMENT	10
RECOMMENDATIONS	11
INVESTIGATIONS AND ANALYSIS	14
VICINITY MAP	
FLOODPLAIN MAP	

CITY OF SALEM
RECONNAISSANCE STUDY

INTRODUCTION

Use of floodprone areas can be a severe problem in Illinois. Urbanization and floodplain encroachment are increasing the severity of this problem. Over 800 communities in Illinois have been identified as having flooding problems.

The Illinois Division of Water Resources (DWR) is the responsible state agency for urban flood control and for setting priorities of flood studies within urban areas. The Soil Conservation Service is providing assistance to the Division of Water Resources in setting these priorities. A joint coordination agreement was executed between the Division of Water Resources, State of Illinois, and the USDA, Soil Conservation Service, on April 30, 1976 and revised in December 1978 to furnish technical assistance in carrying out Flood Hazard Studies. These studies are carried out in accordance with Federal Level Recommendation 3 of "A Unified National Program for Flood Plain Management," under Section 6 of Public law 83-566. A plan of study was executed in October 1983 for reconnaissance studies for 15 Illinois communities. These reconnaissance studies will utilize existing floodplain information, historical high water profiles, and the 100-year floodplain from flood insurance studies when available. Average annual damages are estimated for the structures within the flood plain.

This study was conducted and the report provided for the purpose of: (1) to evaluate needs for additional future studies, (2) to

estimate average annual damages, (3) to provide an updated estimate of the 100-year floodplain and map, and (4) to provide guidance and recommendations to the community for improved floodplain management.

STUDY AREA DESCRIPTION

The city of Salem is located in Marion County, Illinois approximately 22 miles north of Mt. Vernon. The population is 7,183 by the 1980 census. Salem is served by an excellent transportation network. North-south highways Interstate 57 and Illinois route 37, and east-west highway U.S. route 50 are all easily accessible. Salem is also linked to other cities by the Missouri Pacific, Missouri-Illinois, and the Baltimore and Ohio railroads. The city was developed to a large extent by transportation and oil related industries.

Salem is divided hydraulically by Town Creek, Folks Creek, and tributaries to each. Vermilion Creek crosses a small portion of Salem's incorporated area, but its location far to the west of Interstate 57 along U.S. Route 50, negates its effect on the developed areas. The approximate drainage area of Town Creek and its tributaries is 6.2 square miles measured to the point where the creek leaves the corporate limits south of the sewage treatment plant. The approximate drainage area of Folks Creek and its tributary is 1.7 square miles measured to the point where it crosses W. Kell Street near the southern boundary of the city. Both creeks are tributary to Crooked Creek with confluences located approximately one mile south of the city. The drainage is in the Kaskaskia River Basin, hydrologic unit #07140202, Crooked Creek subwatershed #080.

Two reservoirs are located in or near the corporate limits of Salem. The Chicago and Eastern Illinois Reservoir is located on a tributary to Town Creek on the east side of the city. The reservoir itself is not within the corporate limits but is virtually surrounded by development. Salem Reservoir is located on the main stem of Town

Creek on the north side of the city. This reservoir serves as a part of the city's water supply system. The Salem Reservoir Dam is listed in the Army Corps of Engineers', National Dam Safety Program, as having "high hazard potential." This category is justified because "Failure of the dam could interrupt transportation, cause high economic losses to homes, disrupt the water supply system for the city, and cause potential loss of life along Town and Crooked Creeks."1/

The soils in the watershed consist of three predominant types. They are the Cisne, Hoyleton, and Bluford series. These soils are generally made up of approximately one foot of silt loam lying over approximately two feet of silty clay or silty clay loam. The soils were formed in a thin layer of loess over glacial till.

The Cisne series is a naturally poorly drained soil on nearly level upland plains. The Hoyleton and Bluford series are somewhat poorly drained on gentle slopes. They are found frequently on slopes above nearly level Cisne plains. All three soil series are considered prime farmland soils. Marion County has a soil survey in progress.

The cropland areas of the watershed above the city are used as pasture and to grow crops such as soybeans, wheat, and hay.

1/ Department of the Army, Chicago District, Corps of Engineers, Salem Reservoir Inspection Report, National Dam Safety Program, September 1978.

NATURAL VALUES

The city of Salem and Marion County are located in an area of the state that is characterized by an interspersion of land uses. Crop fields are generally moderate in size on the nearly level or gently sloping uplands with scattered pastures, wooded pastures and thick timber. The steeply sloping areas are nearly always left in timber or pasture. The upland drainageways are mostly tree lined providing a large amount of varying quality riparian habitat as well as important travel routes for wildlife. The creek flood plains are similar in land use to the upland but with generally more of the area remaining in timber.

There have been no important cultural resources, threatened or endangered species identified in the existing watershed . The soils in the agriculture areas of the watershed are mostly prime farmland soils. The floodplain soils are not classified as prime farmland since they are subject to flooding more than once every two years.

The interspersed land uses and associated plant communities result in a variety of habitat types which support a diversity of wildlife species. The wide variety of plant and animal species present generally make the area a pleasant place for people to live, work and play.

FLOOD PROBLEMS

The major flooding concerns in the city of Salem are the properties, both public and private, that are adjacent to Town Creek. Salem Reservoir, located at the north end of the city on Town Creek, has a drainage area of approximately 4 square miles. Because it is a water supply reservoir, the pool is maintained at a level at or near the crest of the overflow spillway to maintain a maximum amount of water available. No appreciable flood storage is available because of this approach to managing pool elevations. The city's water treatment plant is located immediately below the dam. Under normal conditions and moderate storm events, no problems are experienced. A 75 year frequency storm would overtop the dam, causing the water treatment plant to be seriously damaged.

The creek below the reservoir has a small, low capacity channel. The channel is fairly sinuous with many sharp bends. Several areas along the channel below the dam flood frequently with the most serious damages occurring in the trailer court southeast of the corner of Jefferson and Olive Streets. The majority of the remaining areas north of Main Street that frequently flood are used as city parks and recreation areas. Although there are some damages that occur when these areas are flooded, they are minimal compared to that which would occur if the area had been allowed to develop into a more intense use such as residential or business.

Storms of 2 to 3 inches of rainfall would result in enough runoff to begin flooding the low areas north of Main Street if the reservoir is at or near the crest of the overflow structure.

South of Main Street, Town Creek flows through an older

residential area. Most of the houses were constructed in the hillside above the flood plain although some damage will occur in many walk-in or drive-in lower levels during large storm events. The areas frequently damaged are in uses such as yards, gardens, and idle areas. Several small sheds and out buildings are located in the flood plain. Damage to these properties would vary greatly depending on the value of the contents.

South of the Illinois Missouri railroad crossing the gradient of Town Creek begins to flatten. The flood plain is mostly grown up in trees and brush and the channel seems to be smaller and shallower. This area is immediately north of the city's sewage treatment plant.

The sewage treatment plant was damaged five times in 1983. The damage was a result of overloaded storm sewers and overbank flow from Town Creek. These storms cause the plant to close operations for up to 12 hours. The largest amount of damage to the treatment plant occurred when water flooded the plant building almost a foot deep. It took a week or more for several men to clean the facility.

The city's sanitary landfill is located in the same vicinity. Flood problems seriously hamper the operation at the landfill with a similar frequency of occurrence to the sewage treatment plant.

A branch of Town Creek runs through the east edge of the city. The Chicago and Eastern Illinois Reservoir is located on this branch above U.S. route 50. At present, this tributary has caused very few problems with exception of its contribution to the flood problems at the landfill. The C. and E. I. branch of Town Creek junctions with the main branch just below the sewage treatment plant.

Below the confluence, the Salem Country Club golf course is apparently the last property that suffers flood damage along Town Creek. During flood events, play is limited due to standing water on several holes and post flood cleanup is a large expense.

Folks Creek is located on the west side of the city. It also is a winding open drainage that courses through various residential and industrial sections of the city. Damages in these areas would probably be associated with floods of 25-year occurrence and greater.

An unnamed tributary to Folks Creek, junctioning just south of the corporate limits, begins in a developing residential area and flows through a business area along and south of Main Street before leaving the corporate limits. The whole watershed of this tributary is very flat with problems due to ponding and shallow sheet flow. In the upper end of this watershed approximately 50 homes have been constructed in one particular development. According to an interview with a resident of this area, relatively small rains can result in water ponding and flowing through the lots and around houses doing minor damage to yards and adding to wetness problems in crawl spaces.

Several areas in the city of Salem are plagued with water problems not relating to overbank flooding. Some of these areas are very flat ridge tops with naturally high water tables and poorly defined surface drainage networks. Other areas are where development has partially or completely obstructed drainageways. Natural upland depression areas have been filled for development purposes in many places which not only cause problems locally, but can also contribute to the flooding problems downstream.

PROBLEM SUMMARY

Estimated average annual damages from floodwaters to the properties listed above are as follows:

No. Homes or Annual Trailers	No. Garages or Sheds	No. Businesses	Total Value	Average Damages
72	26	9	2,953,000	\$26,700

Other areas with problems:

Sewage treatment plant (cleanup, shut down time)	- 3,000
Landfill (use interruption during storm events)	- 500
City parks and recreation facilities (clean up)	- 2,500
Private dog kennels (8-10 pens flooded) (cleanup, lost use)	- 100
Salem golf course (cleanup)	- 500
Parking lots (2) (Lovelace & Aurora Fast Freight) (equipment relocation)	- 400
Wet basements around town (seepage) (\$100 cleanup each)	- 7,500

Flooded streets and state highway, causing traffic disruption)	-	500
Street repair	-	2,000
Several lawns have flooding problems (\$50 cleanup, lost fertility, weeds)	-	2,000
Concrete company yard area (equipment relocation)	-	<u>200</u>
Subtotal		\$19,200
Total estimated average annual damages for the city of Salem is		\$45,900

Flooding starts at the 2 year frequency storm.

EXISTING FLOODPLAIN MANAGEMENT

Salem has participated in the regular phase of the National Flood Insurance Program (NFIP) since May 1979. Therefore, the city has assumed the responsibility of regulating construction in the identified flood plains. Floodplain development ordinances must be in effect to participate in the NFIP. Flood insurance is available to all home and business owners in the city.

The areas that flood along the main portion of Town Creek are protected through a manual flood warning system managed by the local Emergency Services and Disaster Agency (ESDA). The residents in the trailer park at Olive and Jefferson Streets are particularly benefitted by this warning system.

RECOMMENDATIONS

It is recommended that the trailer park at Olive and Jefferson Streets be relocated to an area outside of the flood plain. The present site could be converted to a land use that would suffer minimal flood damage such as park or recreation uses. This recommended action could eliminate a large portion of the flood damage risk along Town Creek as well as reduce the risk of loss of life during a major flood event.

Existing channels should be maintained throughout the city. This may require frequent visual inspections to assure that the channels are free of debris and unwanted vegetation. Channel maintenance on the lower portion of Town Creek would be beneficial. Maintenance would include clearing and snagging of trees, brush and debris within the channel. It is important that the trees and brush be left on the overbank areas from the stabilization and wildlife habitat aspects. Any work involving channels would require a permit application be filed with the Illinois Department of Transportation, Division of Water Resources.

The city should be aware of the limitations for development of the soils in the vicinity. High water tables and poorly defined drainage patterns must be dealt with during the planning and development stage to limit later problems for the individual homeowners. These limitations will be defined by the soil survey.

High water tables also result in problems for existing excavated structures causing wet basements and crawl spaces. Sump pumps are generally employed to dewater these structures. If the outlets for sumps and downspouts are connected to storm or sanitary sewers, an increased amount of water is added to the system. Any water added to the sanitary

system increases the volume needing treatment and potentially surcharges or floods the system. This occurred several times during 1983. The city could limit the amount of damage to the sewage treatment facility by limiting the addition of "clean" or surface water to the sanitary system.

The city would be able to limit damage to the sewage treatment plant and landfill system through a system of flood protection levees.

Buildings in the Town Creek flood plain along South Broadway are subject to damage to the lower levels by flood events of the 10 percent chance and larger. The nine homes and one business in this area could be effectively floodproofed by sealing low water entries or possibly by a levee to separate them from the park and creek. All levees must be carefully designed and installed to insure that the problem is not simply transmitted downstream by increasing discharges. Levees should be constructed along back lot lines in order to use the existing floodplain to its fullest extent.

Consideration should be given to including an on-site detention requirement in the ordinances pertaining to new development. Such requirements should assist in limiting future increases in peak discharges. If desired, the detention practices can be used to actually decrease flood peak discharges on some of the small tributaries to the larger creeks.

The city should work on plans to enlarge and update their existing storm sewer network. This should be an "on going" program that will provide for existing and future expansion of the city. Surface runoff water must have an adequate outlet to be discharged safely. Therefore, all works of improvement should start at the outlet and proceed upstream. By using the proper construction methods, the increased water flow rate,

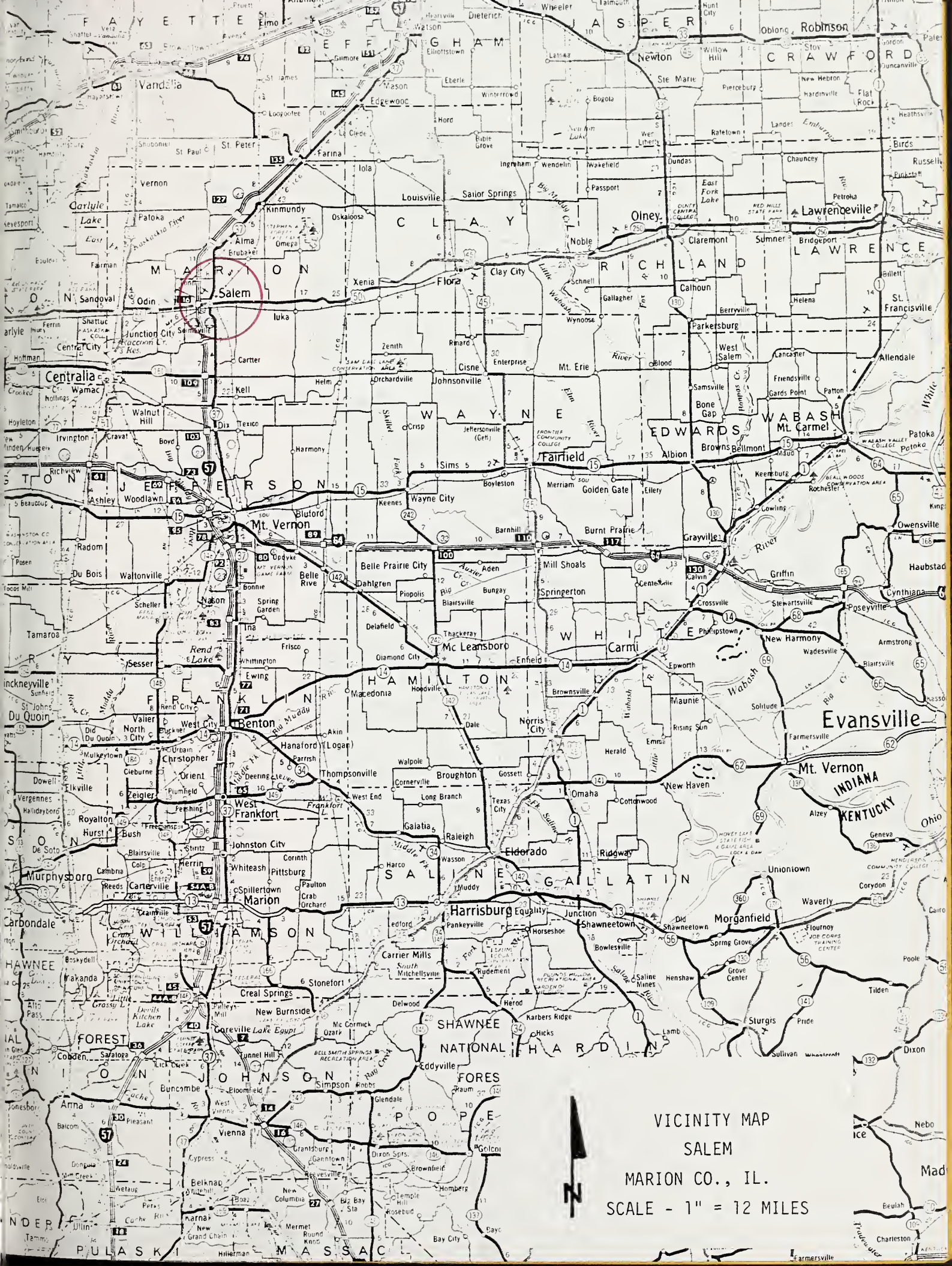
should not be a problem to the city and its residents.

A low priority should be assigned for future detailed floodplain management studies in Salem.

INVESTIGATION AND ANALYSIS

No additional, computations, discharge estimates nor water surface profiles were done as a part of this study. The inventory of flooding and water problems was based on field review and interviews with local citizens. The published Flood Insurance Rate Map, dated May 1, 1979, was used as a guide to the 1 percent chance (100 year) flood plain. Aerial photographs were provided by the Division of Water Resources. Damages were based on property value estimated during the field review and the application of damage factors. The factors were developed during previous detailed floodplain management studies and are based on the frequency and depth of flooding for each property.

The floodplain published as a part of this report is, for the most part, identical to the previously published Flood Insurance Rate Map. The only exception is on Folks Creek just upstream of west Main Street.



VICINITY MAP
SALEM
MARION CO., IL.
SCALE - 1" = 12 MILES



LEGEND

100 YR FLOODPLAIN

CORPORATE LIMITS

RESERVOIR

NORTH

SALEM

Marlon County, Illinois

U.S. DEPARTMENT OF AGRICULTURE
NATIONAL CONSERVATION SERVICE



R0001 201471



R0001 201471